REMARKS

This application has been reviewed in light of the Office Action dated June 29, 2004. Claims 1-27 are pending in this application. Claim 25 has been amended to define still more clearly what Applicants regard as their invention. Claims 1, 17, 20, 22, 25, and 26 are in independent form. Favorable reconsideration is requested.

The Office Action provisionally rejected Claims 1, 13, 14, 26, and 27 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1, 5, 6, and 13-15 of co-pending U.S. Application No. 09/702,765 (Otsuka et al.). Without agreeing with the propriety of this rejection, Applicants acknowledge this rejection but note that it is only a provisional rejection of the claims, and thus does not require any further response.

The Office Action rejected Claims 1-5, 9-17, 20, 22, and 24 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,254,217 (Askeland et al.); rejected Claims 25-27 under 35 U.S.C. § 103(a) as being unpatentable over Askeland et al. in view of U.S. Patent No. 5,774,146 (Mizutani); and rejected Claims 6-8, 18, 19, 21, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Askeland et al. in view of prior art of record to U.S. Patent No. 4,593,295 (Matsufuji). Applicants respectfully traverse these rejections.

Applicants submit that independent Claims 1, 17, 20, 22, 25, and 26, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art at least for the following reasons.

The aspect of the present invention set forth in Claim 1 is a print apparatus which forms a color image by applying ink materials of plural colors onto a print medium, with the print apparatus using a recording means having a plurality of nozzle arrays arranged along a predetermined direction, the nozzle array having a plurality of nozzles to eject ink materials. The apparatus includes a scanner to scan the recording means in forward scanning and backward scanning directions, along the predetermined direction. The apparatus also includes a print controller to control the printing so that a printing means executes the printing while the scanner scans the recording means in the forward scanning and the backward scanning directions, and a changing means to change an order of application of the plural ink materials of different colors to each pixel area.

The print controller applies plural ink materials for each pixel area, the pixel area serving as a unit area to form a primary or secondary color thereon. The print controller applies plural ink materials of different colors for forming the secondary color, to each of plural positions on the pixel area, and the changing means can change orders of application of the plural ink materials of different colors to the respective positions on one pixel area.

Among the notable features of Claim 1 is that an order of application of ink materials to a pixel area is changed. That is, in a print apparatus having the features recited in Claim 1, the order of application of ink materials can be arbitrarily changed between one pixel area and another pixel area.

Askeland et al., as understood by Applicants, discusses that mask patterns are used and an order of application of inks is predetermined for each pixel (or pixel area) regarding pixels on the mask pattern. That is, the order of application of inks is

predetermined in a different matter between one pixel and another pixel. Therefore, Applicants submit that, unlike the apparatus having the features recited in Claim 1, nothing has been found in Askeland et al. that would teach or suggest a changing means for arbitrarily changing the order of application of inks.

Applicants further note that in Askeland et al., if the positions of the dots to be recorded are synchronized with the mask pattern, that is, when dots to be recorded are absent on positions where ink drops are thinned by the mask pattern, the order of application of inks is identical for each of the pixels. This is because nothing in Askeland et al. teaches or suggests a means for changing an order of application of inks. Therefore, the frequency of appearance of plural pixels, of which the order of application of inks are different from each other, changes according to a pattern of dots to be recorded. In contrast, the apparatus having the features recited in Claim 1 is free from such pattern of dots to be recorded.

Accordingly, Applicants submit that at least for these reasons, Claim 1 is patentable over the Askeland et al.

Independent Claim 20 is a method claim that includes the same feature of changing the order of application of inks, as recited in Claim 1, and therefore Claim 20 is believed to be patentable for at least the same reasons as discussed above in connection with Claim 1. Additionally, independent Claim 26 is directed to a data buffer that includes the same features of a print controller for controlling a printing of an image by means of a plurality of nozzles and plural dots of a secondary color being recorded on the same pixel, as discussed above in connection with Claim 1. Accordingly, Claim 26 is believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

The aspect of the present invention set forth in Claim 17 is a print apparatus which forms a color image by applying ink materials of plural colors onto a print medium using a recording means that includes a plurality of nozzle arrays arranged along a predetermined direction, the nozzle array having a plurality of nozzles to eject ink materials. The apparatus includes a scanner to scan along the predetermined direction the recording means in forward scanning and backward scanning directions. A print controller controls the printing by applying plural ink materials for each pixel area, the pixel area serving as a unit area to form a color thereon. The orders of application of the plural ink materials of different colors for forming the process color, to the respective positions on one pixel area, are made symmetric.

Among the notable features of Claim 17 is that the order of application of the plural ink materials are made symmetric.

The Office Action at page 4 states that Askeland et al. discloses that dots of the secondary color to be formed at plural positions on the same pixel area are symmetric (Figure 11B, superpixel 124, wherein an ink dot is formed in symmetric order, i.e., CYYC as shown by each superpixel 124 of the last row). Applicants respectfully reiterate the comments they made regarding this point in the Amendment After Final Action dated April 5, 2004, i.e., Applicants note that the specification, in regard to Figure 11A and superpixel 124, states at column 13, lines 60-62, that "[w]ithin each printed image pixel 124 there are two columns 126 corresponding to the positions of the two mask values 104. The drop deposition order is indicated within each column; the earliest deposited drop at the bottom, and the latest deposited drop at the top." Thus, Applicants submit that this section discusses the positioning of two mask values in relation to the printed image pixel 124, and

nothing in this section, Figure 11B, or any other section of Askeland et al. would teach or suggest that the order of application of the plural ink materials are made symmetric, as recited in Claim 17.

Accordingly, Applicants submit that, at least for this reason, Claim 17 is patentable over Askeland et al.

Independent Claim 22 is a method claim that corresponds to apparatus Claim 17, and is believed to be patentable for at least the same reasons as discussed above in connection with Claim 17.

The aspect of the present invention set forth in Claim 25 is a print apparatus which forms a color image by applying ink materials of plural colors onto a print medium, using a recording means that includes a plurality of nozzle arrays arranged along a predetermined direction, the nozzle array having a plurality of nozzles to eject ink materials. The apparatus includes a plurality of buffers for storing data corresponding to respective ink materials of plural colors, the plurality of buffers corresponding to predetermined ones of the ink materials of plural colors for forming a secondary color. The apparatus also includes a scanner to scan the recording means in forward scanning and backward scanning directions, wherein the scanner scans along the predetermined direction. A print controller of the apparatus controls the printing so that a printing means executes the printing while the scanner scans the recording means in the forward scanning and the backward scanning directions and the changing means change an order of application of the plural ink materials of different colors to the pixel area. The print controller applies plural ink materials for each pixel area, the pixel area serving as a unit area to form a primary or secondary color thereon, the print controller also applies plural

ink materials of different colors for forming the secondary color, to each of plural positions on the pixel area, and the changing means can change orders of application of the plural ink materials of different colors, to the respective positions on one pixel area. When recording is conducted by the predetermined ones of the ink materials of plural colors for forming the secondary color, the changing means changes the order of application of the plural ink materials, by selecting the buffers used for the recording, for each pixel area, from the plurality of buffers.

Among other important features of Claim 25 is that the plurality of buffers for storing data correspond to inks of plural colors and they are selectively used to change an order of application of inks.

Applicants submit that nothing has been found in Askeland et al. in view of U.S. Patent No. 5,774,146 (Mizutani), when taken separately or in any proper combination (assuming such combination would even be permissible) that would teach or suggest the plurality of buffers, as recited in Claim 25.

Accordingly, at least for this reason, Claim 25 is patentable over Askeland et al. in view of Mizutani, when taken separately or in any proper combination.

A review of the other art of record, including Matsufuji et al., has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as applied against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

The other rejected claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and allowance of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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